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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,209	09/25/2002	Larry L. Longden	73591	8169
35070	7590	11/21/2007		
ANATOLY S. WEISER 3525 DEL MAR HEIGHTS ROAD, #295 SAN DIEGO, CA 92130			EXAMINER WAGNER, JENNY	
			ART UNIT	PAPER NUMBER
			2891	
			MAIL DATE	DELIVERY MODE
			11/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/065,209

Applicant(s)

LONGDEN ET AL.

Examiner

Jenny L. Wagner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,6-10 and 19-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,6-10 and 19-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/15/2006</u>  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Re-Opening of Prosecution***

The previous Office action, mailed on November 14, 2006, has been vacated. As a result, prosecution on the merits has been re-opened. Please note the new Examiner contact information located in the conclusion of the Office Action.

### ***Claim Rejections – 35 USC §102(e)***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1, 6 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Strobel et al. (U.S.P.No. 6,720,493).**

**Regarding claim 1,** Strobel et al. discloses a radiation shielding integrated circuit device comprising:

- a die of an electronic circuit device (*figure 7B, 1280*);
- an x-ray shielding tub comprising a bottom portion and sidewalls extending from the bottom portion, the die disposed on the bottom portion between the sidewalls (*figure 7B, 1292*);
- a base coupled to the bottom portion of the x-ray shielding tub opposite the die (*figure 7B, standard material base*);
- a radiation shielding lid coupled to the base (*figure 7B, high-Z lid material*);

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- wherein the radiation shielding lid is not in direct contact with the x-ray shielding tub so that the radiation shielding lid and the x-ray shielding tub do not completely enclose the die (*figure 7B*).

Though Strobel et al. fails to explicitly disclose that the radiation shielding lid and the x-ray shielding tub are positioned to shield the die from x-rays from every angle, whereby the die is shielded from receiving from all directions an amount of radiation greater than a total dose tolerance of the die, Strobel et al. discloses the same structure, therefore Strobel et al. inherently discloses the recited property.

**Regarding claim 6**, Strobel et al. further discloses that the radiation shielding lid comprises a high-Z material (*col. 8, line 13*).

**Regarding claim 28**, Strobel et al. discloses an integrated circuit, comprising:

- at least one circuit die (*figure 7B, 1280*);
- means for shielding the at least one circuit die from isotropic ionizing radiation, wherein the means for shielding the at least one circuit die from isotropic ionizing radiation is configured to shield the at least one circuit die from x-ray radiation from first selected angles and allows x-rays to reach the one circuit die from second selected angles (*figure 7B, high-Z lid material*); and
- means for shielding the at least one circuit die from x-ray radiation (*figure 7B, 1292*).

Though Strobel et al. fails to explicitly disclose the means for shielding the at least one circuit die from x-ray radiation from every angle, Strobel et al. discloses the same structure, therefore Strobel et al. inherently discloses the recited property.

***Claim Rejections – 35 USC §103(a)***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strobel et al. (U.S.P.No. 6,720,493).**

**Regarding claim 3**, Strobel et al. fails to teach that the x-ray shielding tub has a first thickness, the radiation shielding lid has a second thickness, the second thickness being greater

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than the first thickness so that the radiation shielding lid provides greater shielding of ionizing radiation than the x-ray shielding tub. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Strobel et al. in this way in order to use the device in an environment that has more radiation directed toward the chip from above.

**Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strobel et al. (U.S.P.No. 6,720,493) in view of Czjakowski et al. (U.S.P.No. 6,262,362).**

**Regarding claim 7**, Strobel et al. fails to teach that the radiation shielding lid comprises a high Z material and a low Z material. Czjakowski et al. teaches a radiation shielding lid made of a high-Z/low-Z material combination (*col. 6, line 52*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Czjakowski et al. in the invention of Strobel et al. because, in col. 6, lines 53-55, Czjakowski et al. states that this shielded the total dose tolerance to a value less than the integrated circuit die tolerance.

**Regarding claim 8**, Strobel et al. fails to teach a spacing ring coupled to the radiation shielding lid and to the base. Czjakowski et al. teaches a spacing ring coupled to the radiation shielding lid and to the base (*figure 6, 40*).

**Regarding claims 9 and 10**, Strobel et al. fails to teach that the spacing ring comprises a high Z material or a low Z material. Czjakowski et al. teaches that the radiation ring comprises a high-Z/low-Z material combination (*col. 6, line 60*).

**Claims 19-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Czjakowski et al. (U.S.P.No. 6,262,362) in view of Strobel et al. (U.S.P.No. 6,720,493).**

**Regarding claim 19**, Czjakowski et al. teaches a radiation shielding integrated circuit device comprising:

- a base comprising a first surface and a second surface opposite the first surface (*figure 6, 103*);
- a first circuit die disposed on the first surface of the base (*figure 6, 1*);
- a second circuit die disposed on the second surface of the base (*figure 6, 1*);
- a radiation shielding top coupled to the base (*figure 6, 120*);
- a radiation shielding bottom coupled to the base (*figure 6, 120*);
- wherein the radiation shielding top and the radiation shielding bottom comprise material shielding x-rays and ionizing radiation (*col. 6, line 52*);

Czjakowski et al. fails to teach a first and second x-ray shielding tub comprising bottom portions and sidewalls extending from the bottom portions, the first tub coupled to the first surface and the second tub coupled to the second surface. Czjakowski et al. also fails to teach that the x-ray shielding tubs are made of a material shielding x-rays. Strobel et al. teaches an x-ray shielding tub surrounding a die (*figure 7B, 1292*) made of material shielding x-rays (*col. 8, line 8*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Strobel et al. in the invention of Czjakowski et al. because, in the abstract, line 9, Strobel et al. states that this blocked incident radiation.

Czjakowski et al. fails to teach that the x-ray shielding tub has a first thickness, the radiation shielding lid has a second thickness, the second thickness being greater than the first thickness so that the radiation shielding lid provides greater shielding of ionizing radiation than the x-ray shielding tub. It would have been obvious to one having ordinary skill in the art at the

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time the invention was made to modify the invention of Czjakowski et al. in this way in order to use the device in an environment that has more radiation directed toward the chip from above.

Though the combination of Czjakowski et al. and Strobel et al. fails to explicitly teach that the radiation shielding lid and the x-ray shielding tub are positioned to shield the die from x-rays from every angle, whereby the die is shielded from receiving from all directions an amount of radiation greater than a total dose tolerance of the die, the combination teaches the same structure, therefore the combination inherently teaches the recited property.

**Regarding claim 20**, the combination of Czjakowski et al. and Strobel et al. further teaches that the radiation shielding top is spaced from the sidewalls of the x-ray shielding tub so that the enclosure of the circuit die by the radiation shielding top and the x-ray shielding tub is incomplete (*Czjakowski et al. figure 6; Strobel et al. figure 7B*).

**Regarding claim 21**, Czjakowski et al. further teaches a first and second pacing ring coupled to the radiation shielding bottom and to the base (*figure 6, 40*).

**Regarding claims 22 and 23**, Czjakowski et al. further teaches that the radiation ring comprises a high-Z/low-Z material combination (*col. 6, line 60*).

**Regarding claim 24**, Czjakowski et al. further teaches that the radiation shielding bottom and top comprise a high Z material (*col. 6, line 52*).

**Regarding claims 25 and 26**, Czjakowski et al. further teaches that the die is shielded from receiving an amount of radiation greater than a total dose tolerance of the circuit die (*col. 6, lines 64-66*).

**Regarding claim 27**, Czjakowski et al. fails to teach that the thickness of the radiation shielding top or bottom is greater than a thickness of the x-ray shielding tub. It would have been



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obvious to one having ordinary skill in the art at the time the invention was made to modify Czjakowski et al. in such a way, as it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

**Regarding claim 29**, Czjakowski et al. teaches an integrated circuit comprising:

- at least one circuit die (*figure 6, 1*);
- a first radiation shielding lid comprising material for shielding from ionizing radiation and x-rays (*figure 6, 120*);
- a second radiation shielding lid comprising material for shielding from ionizing radiation and x-rays (*figure 6, 120*); and
- the die is not completely enclosed (*figure 6*).

However, Czjakowski et al. fails to teach an x-ray shielding tub comprising a bottom portion and sidewalls extending from the bottom portion, the bottom portion and the sidewalls comprising material for shielding from x-rays, wherein the shielding tub is disposed between the first radiation shielding lid and the second radiation shielding lid. Strobel et al. teaches an x-ray shielding tub surrounding a die (*figure 7B, 1292*) made of material shielding x-rays (*col. 8, line 8*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Strobel et al. in the invention of Czjakowski et al. because, in the abstract, line 9, Strobel et al. states that this blocked incident radiation.

Though the combination of Czjakowski et al. and Strobel et al. fails to explicitly teach that the radiation shielding lid and the x-ray shielding tub are positioned to shield the die from x-rays from every angle, whereby the die is shielded from receiving from all directions an amount

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of radiation greater than a total dose tolerance of the die, the combination teaches the same structure, therefore the combination inherently teaches the recited property.

**Regarding claim 30**, Czjakowski et al. further teaches that the first and second x-ray shielding lids are not in direct contact with the x-ray shielding tub (*figure 6, 120*).

**Regarding claims 31 and 32**, Czjakowski et al. fails to teach that the x-ray shielding tub provides less shielding of ionizing radiation than the shielding lid, or that the x-ray shielding tub is thinner than the radiation shielding lid. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Czjakowski et al. in such a way, as it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

**Regarding claim 33**, Czjakowski et al. teaches an integrated circuit comprising:

- a base (*figure 6, 103*);
- at least one circuit die (*figure 6, 1*);
- a first lid comprising material for shielding from ionizing radiation and x-rays (*figure 6, 120; col. 6, line 52*);
- a second lid comprising material for shielding from ionizing radiation (*figure 6, 120; col. 6, line 52*);
- a first spacing ring comprising material for shielding from x-rays (*figure 6, 40; col. 6, line 60*);
- a second spacing ring comprising material for shielding from x-rays (*figure 6, 40; col. 6, line 60*);

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- wherein the first and second spacing rings are disposed between the base and the lids (*figure 6, 40*); and
- the die is not completely enclosed (*figure 6, 1*).

However, Czjakowski et al. fails to teach an x-ray shielding tub comprising a bottom portion and sidewalls extending from the bottom portion, the bottom portion and sidewalls comprising material for shielding from x-rays or that the x-ray shielding tub is disposed between the base and the x-ray shielding lid. Strobel et al. teaches an x-ray shielding tub surrounding a die (*figure 7B, 1292*) made of material shielding x-rays (*col. 8, line 8*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Strobel et al. in the invention of Czjakowski et al. because, in the abstract, line 9, Strobel et al. states that this blocked incident radiation.

Though the combination of Czjakowski et al. and Strobel et al. fails to explicitly teach that the radiation shielding lid and the x-ray shielding tub are positioned to shield the die from x-rays from every angle, whereby the die is shielded from receiving from all directions an amount of radiation greater than a total dose tolerance of the die, the combination teaches the same structure, therefore the combination inherently teaches the recited property.

#### ***Response to Applicant's Remarks/Arguments***

Applicant's arguments with respect to all of the claim have been considered but are moot in view of the new ground(s) of rejection.

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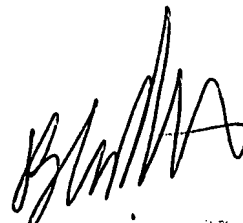
*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jenny L. Wagner whose telephone number is 571-272-9792. The examiner can normally be reached on Monday through Thursday 7:00 a.m. to 5:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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